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ABSTRACT

The report describes a project to document the content, nature, and effectiveness of services to limited-English-proficient (LEP) students in the Ontario-Montclair School District (California), which has a high concentration of LEP students and a variety of English language development (ELD) programs. The district developed a comprehensive computer system that links LEP instructional services to students' language and academic progress. The report describes the three phases of the project: an inventory of the district's existing data systems, documentation of district ELD programs and services, and development of a plan for a comprehensive data tracking system. The study identified two data management issues affecting language development programs related to design limitations of a currently-used database system, and seven general data management issues relating to the overall efficiency and integrity of the data systems. Solutions are offered. (MSE)

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A Comprehensive Inventory of Language Development Documentation Data in the Ontario-Montclair School District

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I- Introduction

The Ontario-Montclair school district is serving a wide variety of student groups whose native language is not English. The student groups differ in culture, educational experiences and socio-economic backgrounds. Currently 48% of the district's elementary school and 38% of the middle school students are designated LEP and the number is expected to increase in the upcoming years. Facing the needs of diverse student population, Ontario-Montclair school district has developed a variety of English Language Development programs and services. The content and nature of services offered to various students, however, are not being currently systematically documented. The district is utilizing a mainframe computer (a Hewitt Packard HP3000) to maintain student records. This system tracks a variety of data on students such as demographics, enrollment and attendance. However, the present system is not designed to provide comprehensive data on language development and does not capture information about language services or link services with academic or linguistic achievement data.

The district recognizes an immediate need to create a centralized data system that keeps track of services, language development programs and instructional services provided to LEP students and monitors both student's language and academic progress. This is essential in order for district and school officials to examine the effectiveness and performance of the various ELD programs. In addition, the district wide data system need to be redesigned to provide practical assistance in coordinating a wide variety of other data management needs to facilitate the daily activities of district and school level staff.

During Fall 1997, District and CERC staff met and agreed on a three phase study plan that provides specific strategies and allows the school district to develop a comprehensive computer system which links instructional services for LEP students to

their language and academic progress. This study lays the foundation for accomplishing the district's long range plan to build a computer system that effectively manages information needed to support high quality instructional decisions and resource administration as outlined in the 1998 District Master Plan Technology and Information Services. The three phases of the study are:

Phase 1: Inventory of the Ontario-Montclair's School District Existing Data Systems.

This phase examines the existing district and school data sets, data collection processes and data storage and retrieval systems. It identifies the type of student and teacher information currently being gathered, and the technology used to store, analyze and report these data.

Phase 2: Documentation of District Language Development Programs and Services.

This phase reviews the different language development programs implemented and identifies the key elements for each program in order to design a data tracking system that is sensitive to differences between programs.

Phase 3: A Plan for Developing a Comprehensive Data Tracking System.

This phase will result in the development of a written plan for language development documentation and analysis system based on Phases 1 and 2.

A design team consisting of District, School and CERC staff was created to guide implementation of the study and assist in determining which individuals and schools should be targeted for obtaining the information to achieve a good tracking system design. The design team identified 9 schools that typify various approaches to data collection and management and that represent various approaches to language development for LEP students. For several months, CERC has been studying the nature and quality of the existing data sets used by district staff at both the district and school levels. CERC staff visited the 9 identified schools and various district and county offices. The appropriate personnel were interviewed to gain in-depth understanding of the available data systems and how they communicate with each other.

II - Inventory of Existing District data bases

Numerous databases exist at the district level for use in day to day activities. For the purpose of this study, CERC identified seven main data bases where information on students, district, school personnel and programs are stored. They are: 1) an HP 3000 based Student System , 2) a Special Education Services database, 3) the Student Re-designation database, 4)a Standardized Test Scores database, 5) a Payroll database, 6) a Personnel database and 7)a Food Service database.

A- Student System

The Student System is the primary database and the largest one. It is designed to keep various types of information on students and their educational experiences. The Student System is an HP3000 Image database and uses a COBOL software program available in modular form from QSS -- a private software development company. This system uses a terminal emulator program to provide stand alone PC with access to the database. Computers throughout the district are connected with multilevel password control used to provide security and differential access. Personnel then at both school and district levels are able to enter, store and view data, and generate reports from the database. The basic Student System package is modular and was developed and maintained by several County offices a decade ago. At the present time the system is owned by QSS. Ontario-Montclair school district bought some of the modules 10 years ago and more recently added five new ones. Currently the Student System includes the following:

1- Main Data- includes student demographics and English Language Proficiency levels
2- Schedule- includes information on the type of courses Middle school students assigned to
3- Enrollment-includes type of programs students are enrolled in
4- Guardian – includes Guardian residence information
5- A "Client Screen" which includes language assessment scores and teacher credential codes
6- Special Services – includes information on type of special education services provided

to students and Dates services were received

7- Health Data- includes information on student's health condition and health examination results
   - Immunization Record
   - Health Screen
   - Vision Exam Result
   - Health Exam Maintenance
   - Approved Medication Maintenance
   - Medical billing (for health services)
8- Attendance – includes student absences and reasons for absence
9- Billing – includes information on billing library books
10- Grades and Transcripts– includes grades and academic performance information on Middle School Students
   - Student Grade Maintenance
   - Mid Quarter Progress Data Maintenance
   - Student Transcript Maintenance
11- Student Incoming Transfers- includes information on students' grades prior to being transferred to Ontario-Montclair school district
12- Student Test Data Entry-includes standardized test score information
13- Student Locker Maintenance- includes information on locker combination, setting and type
14- Student Discipline-includes information on student's disciplinary behavior, disposition and resolution
   - Student Referral Maintenance
   - Student Interview Maintenance
   - Student Detention Maintenance
   - Student Infraction Comment Maintenance
   - Student Disposition Comment Maintenance
   - Student Activity Maintenance

The system utilizes a relational database model. Some modules consist of a single table, others consist of multiple tables storing a variety of information. In generating reports, multiple tables are linked together to combine the separately kept information and reveal relationships among data elements. Relationships among the various modules and tables are complex and not documented in the data system manuals.

Most modules in the Student System can accumulate student information over a period of time. The ones concerned with student's scheduling, enrollment, special services, health, attendance, Discipline, Standardized testing scores and grade point

averages have the capability of adding current information to the fields defined in the data sets without overwriting the information already in place . However, the main data, Guardian module and Client Screen can only keep the most recently entered information.

An important feature of the Student System is its report generation option. Each module has a list of reports that can be created automatically by clicking on a number next to the report and choosing the required specifications shown on the computer screen.

B- PC Based District Data Systems

In addition to the Student System there are six smaller independent databases kept by different district offices on IBM computers that are central to this study. These databases document supplementary student data (others than the ones kept in the Student System). They also record information on teachers and other district and school personnel. None of these PC-based data systems are linked to the Student System or to each other.

The Pupil Service Office keeps information on the type of special education services provided to students. Staff record this data in a "Q&A" database which consists of four data sets. Two of them are designed for Special Day Classes (SDC) and for RSP students. Both data sets include student demographics, English Language Proficiency Status, School, Date students started receiving special education services, Reason for receiving the services, Dates of Psychological Evaluation and Annual review. The remaining two data sets contain information on students who receive services at the County level and on those who are in pre-school or who are enrolled in private schools but receive psychological assessment at Ontario-Montclair school sites. Although the Student System has recently added a special education module, at the time of our interviews it was not in use and information was still being entered in the Q & A database.

Another district level "Q&A" database was designed to document language assessment results and re-designation information on LEP and FEP students. This database has two data sets of which only one is still operational. The first data set was designed to keep multiple assessment scores on students' native and English proficiency to track their language development . This information is now being entered on the Client Screen of the Student System. Since this module does not handle multiple assessment scores, however, only the most recent entry is stored – a limitation reported by many staff members to sufficiently reduce the value of this data. The student re-designation data set is current and has information on students who may be eligible for re-designation. The data set includes English language assessment scores, teacher evaluation, standardized test scores, and re-designation status.

A third important database is in SPSS (Statistical Package for Social Sciences). This database kept student standardized test scores from 1986 till 1996. This was done prior to adding the Student Test Data module to the Student System. The database consists of separate files since different tests were given to students in the 10 year duration and in certain years not all students were tested.

Also the Payroll Office created two lotus data sets to record accounting and budgetary information on district and school employees including staff positions and salaries. Some of that information is also documented in a Microsoft Access database at the Personnel office, where employee recruitment information, such as date hired in district, position, school, salary and credentials is tracked. The Personnel database interfaces with the County system and uploads the data to that system. Similar to the Student System, the County system is also an HP 3000 image data base but with a Financial module. In other words, it does not contain student data. For financial information various district offices such as the Payroll office relies heavily on the County system because of the extensive and updated data it has on employees, payroll and payment of vendors.

Finally, food services have a database that documents information on students who receive free/ reduced lunch. This information is confidential, however the food service department provides a listing of the students who receive this service which then is documented in the Student System.

III - School Site Access to the District Data Bases

All Ontario-Montclair schools have access to the Student System. Schools have IBM computers at their main offices that are connected to the district's Student System, which allow school staff to view the various screens. The number of computers hooked to the Student System varies from one school to the other, mostly depending on the procedures adopted by schools to collect, maintain and retrieve the Student System data. The district conducts formal and informal training and is available for telephone consultations to instruct school staff on the use of the system. From time to time district staff prepares and distributes updated instructions to the schools. A user's manual is available at the district office. It provides detailed information regarding the functions of the Student System and the techinques to be used for data processing, but is too complex and cumbersome for routine use.

A- Data Collection and Entry

The data collection and entry process starts at the beginning of each academic year when students register for school. Information on continuing students is rolled over from the previous to the current year in the Student System. For new students, the data collection process begins by parents filling the forms in the enrollment packet provided by the office manager or clerk which requests emergency and immunization information. In addition parents are required to complete a home language survey to determine whether their child need to be assessed for English and primary language proficiency. The office manager or clerk usually enters this basic information in the main data module such as demographics and English language development classifications (based on the home language survey), in addition to entering parent contact and residency information into the Guardian module. The health clerk or nurse enters immunization information on students into the

health module obtained from the health survey completed by parents. Initial enrollment information for students is also entered by the office manager into the enrollment module at the beginning of the academic year. The data entry process from this point on varies considerably from school to school due to variation in the availability of resources and computer experienced staff.

Individual vs. Multiple staff

At the schools staff such as office managers, clerks, program facilitators and teachers are responsible for collecting different pieces of student information on academic programs, services, student performance, attendance and discipline throughout the academic year. At some school sites staff collecting the data send the information to the office manager or clerk to enter into the Student System. At other school sites multiple staff are responsible for entering data. Often, however information is passed from one staff to another before entry (e.g. teachers do not enter the attendance data they collect).

In general, after new students are initially identified through the home language survey as being Limited in English Proficiency, program facilitators or bilingual coordinators are usually responsible for assessing (or for initiating the assessment process) students' English and Primary and language. Based on the results of the assessment, program facilitators with feedback from other school staff (e.g. teachers, language development specialists and principal) assign the students to the appropriate programs. At some school sites this information is sent back to the office manager to enter into both the client screen and enrollment module, while at other schools the program facilitators/bilingual coordinators are responsible for entering students language classification (whether FEP or LEP), language assessment scores, program placement code (whether a student has been assigned to a bilingual teacher) and other programs assigned to. As mentioned earlier sometimes the office manager enroll new students in the programs prior to their language assessment. The program facilitator in this case will go back to the enrollment module to make the appropriate changes in student program assignments.

There are some schools that assess all new students including English only students in order to assign them to the appropriate programs. Language assessment scores for English only students, however are not entered into the client screen.

The student attendance information is collected by teachers on a daily basis. There are two standard district forms that teachers use for taking student roll; one is used for elementary schools and the other one is for middle schools. The middle school form is scannable. At the elementary school level teachers record absences for each school day, while at the middle school level teachers report absences by class period. The forms then are sent back to the main office for data entry. Some schools have an attendance clerk for entering the attendance data (either by hand or through scanning the forms), while at other schools the data is entered by the office manager. Schools, in general enter this data on daily basis.

Grade scores and student progress information are also collected by teachers on middle school students only through the use of a standard scannable forms that teachers complete at the end of each trimester. These forms are then scanned by either the office manager or at some schools by the registrar and entered automatically to the Student System.

Course Scheduling information is collected only on middle school students. Usually the counselor prepares the class schedule for each student in the summer time before the beginning of the academic year and enters the course information in the Student System. For new students, this information is prepared and entered by the counselor at the beginning of the new academic year. For elementary school students the scheduling module includes the student's grade level, teacher name and room number.

Most schools in Ontario-Montclair school district do not keep student discipline information on the Student System. All schools visited for this study kept this information either on their school databases or in folders. Usually the assistant principle collects and documents this information.

School vs. District staff

Schools also vary in the extent they rely on district assistance for data entry. Some schools have adequate number of experienced staff to enter all the data at their sites, while others forward some of the student data to the district's office to be entered into the Student System specifically data pertaining to the Client screen. District staff in this case enter student language assessment scores and the program placement code. They are able to determine the student program placement code by obtaining roaster of staffing for teachers from the personnel office, in addition to updated teacher information from schools.

B - Student System Maintenance

Maintaining the Student System is a complex process due to the numerous school staff involved. The staff who are responsible for entering the various pieces of information into the Student System are also responsible for maintaining them. Some data elements are updated on a regular basis, while others are changed less periodically. Thus, the level of confidence in which different pieces of information are maintained on the Student System varies. For example, information reported by schools for funding purposes (e.g. student attendance, poverty students and special program assignments) are kept current in a timely manner. Other types of information particularly those that do not relate to monetary issues, such as language assessment scores and student discipline are not updated constantly.

C- Student System Retrieval Process

Each module in the Student System has a report generation option which provides a list of reports that could be created automatically. Staff who enter and maintain data also generate reports requested by school personnel such as principals and teachers. District and school personnel have different levels of access to the system reports. Schools cannot access all the report options (e.g. the MEDICAL billing report). Thus, it relies on the district to generate specific reports. Sometimes even within the same school different people have different access to the preformatted reports. For example, the attendance clerk in some schools can access the attendance reports and not those generated by other program modules.

Some of the reports, such as language assessment scores, can only be obtained on individual students, while others (e.g. attendance reports and standardized tests) can also be generated on aggregate levels such as classroom, grade level, program and school levels.

Schools are not linked to other district databases described in Section II of the report. Reports from these databases are generated at the district level and submitted to schools when needed. Schools, however have access to the County Financial System where they can view and generate reports for budget summaries and financial activities.

IV- Inventory of Existing School Data Bases

Six of the nine schools visited by CERC staff had developed site specific databases where information on students, teachers and type of instructional services are kept. In general these databases are created and maintained by bilingual coordinators or program facilitators. The type of technology used to create the databases vary among schools. Some databases are stored on IBM computers, while others are stored on Apple Mackintosh. Also schools use variety of software packages to manage their databases such as Claris Works, File Maker Pro, Fox Pro, Access etc.. The selection of the hardware and software in the absence of a district wide strategy is based on the familiarity of the particular program users.

The individual databases at some school sites record information similar to the ones found in the Student System, but are designed to allow the addition of new fields, if the need arises, simplify the data manipulation and retrieval processes and produce reports that meet schools' everyday needs. For example, student Discipline school site databases include information on students' behavioral problems, action taken and parent notification. They also record historical disciplinary data and even use the same behavioral disposition and resolution codes used in the Student System. However, these databases are designed to be visually appealing, user friendly and allow staff with modest computer skills to enter, store, retrieve and automatically produce personalized notification letters to parents and other types of reports such as a list of daily suspensions. Although the Student System report list provides different options for report generation, the list is not comprehensive and the Student System database is not easily manipulated to allow school staff to retrieve information in a form that best serves their needs. The information documented by the Student System is kept in separate modules that are not linked together which makes it difficult for school staff to concurrently retrieve this information to include in one report. This is the case with the language assessment and standardized test scores. Some schools feel the need to reenter pieces of information on their own databases or spreadsheets so that they can easily generate a report that shows student English language assessment and standardized test scores instead of asking the district to generate these reports for them. A consequence of this process is that school staff may become more directly interested in maintaining their own databases, relying on them to track student information rather than relying on the district Student System..

Other individual school site databases contain additional information that cannot be found in the Student System, but is seen by schools as essential to document. Although the type of supplementary student and teacher information collected vary from school to school , some is found to be widely used. One of the most prevalent pieces of information is concerned with student language assessment scores. Schools have designed special databases to keep track of students' IPT, Woodcock-Munoz and Solom

test scores. Although the client screen of the Student System is designed for that purpose, it does not store the complete assessment scores or additional scores other than for Reading and Oral sections of exams. There is not enough space, for example, to enter the Total testing score or the Relative Performance Index. Moreover, as mentioned earlier the client screen is not capable of accumulating or reporting records from repeated assessments. Since some schools test their students' primary and English language skills on a regular basis, there own databases provide them with the space needed to input this longitudinal data, and thus allow school staff to examine students' language acquisition progress. Usually these databases also include student demographics, standardized test scores in Math, Reading and Language Arts, testing information for Title I students (e.g. BEST and WRAT scores) type of language development programs (such as Transitional, English, Spanish and Pullout), other special programs (such as title 1 or special education programs) and redesignation date.

Teacher credentialing is another piece of information that is widely documented electronically by schools. These databases contain information on teachers, grade level they teach, type of credentials they have (e.g. BCC, BCLAD, LDS, CLAD) and whether or not they are in training for credentials. Other databases pertaining to teachers also include budget information on the amount of money allocated for each teacher, how much was spent, and how much is still available.

Student Study Team Referral and Grade Point averages are also being recorded on individual school site databases but less extensively than the language assessment scores. Student Study Team referral databases include information on students who may have learning problems and may need research specialist program (RSP) services, and record data on the type of assessments and whether or not students are eligible for these special services. Also report card information in some elementary schools are kept electronically since the Student System only documents grade point averages and academic performance for middle school students. These databases are designed to correspond to the district's elementary report cards and include information on student's performance in

Language Arts and other Content Areas, Special programs (e.g. Spanish language Arts, English Transitional Reading etc..), behavioral/study habits, and attendance.

The databases described in this section are not the only ones that exist at the schools, but they are common, well developed and some of them have been in place for several years. There are other databases that keep financial information on school expenditures, and track budgets for special grants such as Title I and Title VII. Also information on specific classroom activities and students that are transitioning are also recorded by some schools. The documentation of such information varies greatly from school to school and will not be discussed in this report.

The linkages among the school site databases vary from school to school. In general, the various data bases found at school sites are not connected together. Some schools are in the process of linking their data bases. Others, through the use of Student System software, are now able to download information from the Student System, such as student demographics, into the database programs used at the school sites in order to link Student System information to school databases. This linkage transfers the Student System data to the school databases which then allows school sites to manage data in a way that fits there needs. Thus, data management at those schools is moving from centralized format to site specific. An important drawback of this process is that these schools may start focusing on updating their own databases and stop maintaining the district's Student System which will lead to undermining its data integrity as can be seen in the case of the student disciplinary data. Information in the Student Discipline Module is not being kept consistently by schools. Most of the schools actually do not enter student behavioral data in the Student System, but keep the information either on their own databases or in school folders.

Summary of Central Data Management Issues

To summarize, this study has identified ten central issues that will need to be addressed in the development of a data management system capable of tracking program effectiveness. Two of these issues are directly related to the question of documenting language development among students whose primary language is not English. Seven issues address questions related to overall data system efficiency and usefulness. The last issue goes to the question of resources and concerns how much the district is ready to invest in data system improvement.

Two Data Management Issues Affecting Language Development Programs

The two issues directly affecting documentation of language learning programs are:

1. The limitations on data management, analysis and reporting created by utilizing the Student System's "Client Screen" to record and track student language learning progress.

The use of the "Client Screen" for recording student language development data is problematic in two respects. First, the Client Screen does not maintain a longitudinal record of the data entered there. Each new entry overwrites and removes the existing data, making it impossible to develop reports showing growth over time. To evaluate language development program effectiveness it is essential to maintain a running record of student progress.

The second problem with using the Client Screen is that the data stored here is not fully linked with other data in the overall Student System. This limitation makes it necessary to redundantly record students' language status (on both the main data screen and again on the Client Screen). Any time a data system requires this type of redundant

data entry it becomes more prone to data entry errors and makes it harder to those responsible for maintaining the integrity of the data to catch and correct data entry errors.

2. The existing data system does not provide for the collection and tracking of language development service delivery data, thus limiting the capacity of the system to document program effectiveness.

While students' enrollment, status, program assignments, attendance and academic progress are all provided for in the existing data systems, the content and character of their instructional programs are not. For this reason, the existing data system is most effective in facilitating studies of how well students are achieving academic and language development success, and monitoring some of the factors in their backgrounds, behavior and administrative program assignments influencing that success. Without program content and instructional technique data, however, it is not possible to determine what instructional processes or program elements are most powerful in facilitating their success.

Seven General Data Management Issues

The remaining issues identified in the review of the district data systems relate to the overall efficiency and integrity of the data system. They represent issues which, if adequately addressed, would encourage data-based program planning and development throughout the district's educational programs.

3. The district data systems are complex, not fully integrated, and maintained by a very large number of staff members at the school and district levels. These factors combine to create an ongoing need for staff training and, above all, staff orientation to the purpose and value of the data elements they are responsible for maintaining.

District staff have made very substantial efforts to provide school level personnel with needed training and technical assistance. This support has generally worked well, but

there remains a lot of variability in the extent to which school level staff understand or are able to utilize the capabilities of the district data management systems.

4. With the increased power and sophistication of desktop computers and a growing emphasis on educational planning and accountability, local school sites have turned increasingly toward the development and maintenance of school level databases that are detached from, and often redundant with, the district's data management system.

The use of school level data systems deserves to be celebrated as a powerful indication that educators are making major steps forward in the effective use of data to guide instructional decisions. Nevertheless, the proliferation of school-level data systems divides attention and effort of district and school-site data entry and maintenance. This development has spawned three related issues.

5. School site level databases rely on diverse data management hardware and software systems with the result that when staff move from one school to another the ability to utilize the local data system is placed in jeopardy.

It seems likely that the adoption of a district plan for supporting site level data management software and hardware would encourage development of more standardized site level data systems that would help to reduce staff confusion and learning time.

6. The lack of a district supported software and hardware standards for school site data management makes it difficult to develop needed staff training and to facilitate site data system development.

If school sites used a small number of desktop computer software programs (optimally just two – one for Apple computers and one for IBM compatible computers) it would be possible to generate a district wide training and support system that would encourage standardization of database designs and data collection and analysis procedures.

7. The lack of direct and easy linkages between district data sets and site level data management systems often makes double entry of data necessary and encourages the use of old data at one level or the other.

To some extent, no doubt, school level data systems have evolved because site-level staff find the new desktop computer technologies easier to use or just more interesting to work with than the district mainframe. This tendency can be offset by better training and by the development of more user-friendly district systems. Quite often, however, school site educators need to monitor data streams not maintained by the district, and they often need to link these local data to district mainframe data. The current techniques for doing this are cumbersome and rely on duplicating data sets, rather than enabling remote access and linking. This leads to the last two issues underscored by this study.

8. New data management technologies which permit the separation of query development from data storage software are not yet being utilized by the district to enable remote data querying and integration of local and district level data systems.

The creation of standards for linking databases across computers and even among different software programs for database design (such as Java Scripts ®, Oracle ® or Microsoft *Open Data Base Connectivity® (ODBC)* standard) now make remote linking and querying of data bases feasible and cost-effective. More importantly, they make it possible for short term or occasional links to be established between two databases without compromising the integrity of either data system.

9. Development of Internet (or some other wide area network) connectivity may provide a more powerful way of linking databases throughout the school district that can be expected to replace the current system of terminal-emulation software used to gain remote access to the district mainframe computer.

If district hardware and software are designed to support network communications, wide area network connectivity would add both speed and flexibility to the use of linked databases. In combination with an open data base linking strategy approach to software

integration (issue #8), utilization of a wide area network for data transmission could greatly facilitate system integration and make it much easier to develop educational program evaluation data models.

The Resource Issue

In the end, data system development will depend on the allocation of resources. With rapidly changing technologies and equally fast changing data needs, it is difficult to say exactly how much investment in database development and staff training for its use in educational planning and accountability should be made. Nevertheless, it is important for the district to address the issue:

10. How much can and should be invested in developing the district data management systems.

Certainly development of linkages among school site and district-level databases is essential. Movement to more distributed technologies for data query development and moving to Internet based data and report distribution is almost certainly going to be needed. The questions of "How much?" and "How soon" are at the core of the districts planning needs.